AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A method for modifying a motor drive signal, the motor drive signal created by a pulse generator and coupled to a motor via a compensator, the method comprising:

receiving a pulsed motor drive signal from the pulse generator;

obtaining compensator current and compensator voltage measurements including an output current of the compensator and an input voltage of the compensator, the output current of the compensator and the input voltage of the compensator generated in part due to the pulsed motor drive signal;

generating compensator reference values based on a characteristic line impedance of a line coupling the pulse generator to the motor, a propagation delay parameter of the line, and the compensator current and compensator voltage measurements; and

controllably adjusting a compensator current source and a compensator voltage source in response to error signals computed from the compensator current and compensator voltage measurements and the compensator reference values in order to generate a compensator motor drive signal.

2. (Previously Presented) A method of compensating a motor drive signal, the motor drive signal created by a pulse generator and coupled to a motor via a compensator, the method comprising:

receiving the motor drive signal from the pulse generator;

obtaining compensator current and compensator voltage measurements generated in part due to the motor drive signal;

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generating compensator reference values based on a characteristic line impedance of a line coupling the pulse generator to the motor, a propagation delay parameter of the line, and the compensator current and compensator voltage measurements; and

controllably adjusting a compensator current source and a compensator voltage source in response to error signals computed from the compensator current and compensator voltage measurements and the compensator reference values in order to modify the motor drive signal, thereby providing a compensator motor drive signal.

3. (Original) The method of claim 2, wherein the step of generating compensator reference values comprises generating a reference current waveform and a reference voltage waveform.

4. (Canceled)

5. (Previously Presented) The method of claim 2, wherein the characteristic line impedance is estimated in response to material properties of a transmission line.

6. (Previously Presented) The method of claim 2, wherein the propagation delay parameter is estimated in response to material properties of a transmission line.

7. (Previously Presented) The method of claim 2, wherein the propagation delay parameter is estimated in response to propagation delay measurements.

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8. (Original) The method of claim 3, wherein the reference current waveform and the reference voltage waveform are continuous-time signals.

9. (Original) The method of claim 3, wherein the reference current waveform and the reference voltage waveform are discrete-time signals.

10. (Original) The method of claim 9, wherein the reference current waveform and the reference voltage waveforms are stored in a memory device.

11. (Original) The method of claim 2, wherein the step of obtaining compensator current and compensator voltage measurements comprises measuring a compensator input voltage and compensator output current.

12. (Original) The method of claim 11, wherein the measurements are analog signals.

13. (Original) The method of claim 11, wherein the measurements are discrete time signals.

14. (Original) The method of claim 2, wherein the compensator current source is a parallel active filter and the compensator voltage source is a series active filter.

15. (Original) The method of claim 14, wherein the parallel active filter and series active filter are controlled by a pulse controller.

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16. (Original) The method of claim 15, wherein the pulse controller is a pulse width modulation controller.

17. (Canceled)

18. (Original) The method of claim 2, wherein the step of controllably adjusting a compensator current source and a compensator voltage source is performed by a microcontroller.

19. (Original) The method of claim 2, wherein the step of controllably adjusting a compensator current source and a compensator voltage source is performed using analog controllers.

20. (Previously Presented) The method of claim 19, wherein the analog controllers are proportional integral derivative (PID) controllers.

21. (Previously Presented) The method of claim 19, wherein the analog controllers are proportional integral (PI) controllers.

22-35. (Canceled)

36. (Previously Presented) The method of claim 1, wherein controllably adjusting the compensator current source and the compensator voltage source to generate a compensator motor drive signal comprises applying a linear combination of controlled voltages and currents to the pulsed motor drive signal to generate a modified pulse.

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37. (Previously Presented) The method of claim 36, further comprising propagating the modified pulse to the motor.

38. (Previously Presented) The method of claim 37, further comprising combining the modified pulse with wave reflections created due to the line coupling the pulse generator to the motor to provide a desired voltage to the motor.

39. (Previously Presented) The method of claim 1, wherein generating the compensator reference values comprises solving the following relation:

$$\begin{bmatrix} \tilde{i}(t) \\ v(t,0) \end{bmatrix} = \frac{1}{1+e^{-2ds}} \begin{bmatrix} \frac{1}{Z_0}\left(1-e^{-2ds}\right) & -2 \\ -2e^{-2ds} & -Z_0\left(1-e^{-2ds}\right) \end{bmatrix} \begin{bmatrix} \tilde{v}(t) \\ i(t,0) \end{bmatrix},$$

where Z_0 is the characteristic line impedance, d is the propagation delay parameter of the line, $\tilde{v}(t)$ is the compensator voltage measurement, $i(t,0)$ is the compensator current measurement, $\tilde{i}(t)$ is a compensator current reference value, and $v(t,0)$ is a compensator voltage reference value.

40. (Previously Presented) The method of claim 1, wherein generating the compensator motor drive signal comprises generating time-delayed versions of the compensator current measurement and the compensator voltage reference value.

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41. (Previously Presented) The method of claim 1, further comprising generating the error signals by comparing the compensator reference values to stored desired values of the compensator reference values.

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